WHAT IS CLAIMED IS:

1. An intraluminal catheter, comprising an elongated shaft having a proximal end, a distal end, at least one lumen, a first layer, a second layer, and having

   a) a first longitudinal section with the first layer having a tapered surface, and the second layer having an inversely tapered surface; and

   b) a second longitudinal section with a tapered outer diameter, at least one of the first or second layers having a tapered inner surface and a tapered outer surface in the second longitudinal section, and at least one of the first or second layers having a substantially constant wall thickness in the second longitudinal section.

2. The catheter of claim 1 wherein the first and second layers are coextruded.

3. The catheter of claim 1 wherein the first longitudinal section has a substantially constant outer diameter.

4. The catheter of claim 1 wherein the first layer is an inner layer relative to the second layer.

5. The catheter of claim 4 wherein the first layer has a tapered inner surface and a tapered outer surface in the second longitudinal section of the catheter shaft, and the second layer has a substantially constant wall thickness in the second longitudinal section of the catheter shaft.

6. The catheter of claim 5 wherein the first longitudinal section of the catheter shaft is proximal to the second longitudinal section of the catheter shaft.

7. The catheter of claim 6 wherein the catheter shaft includes a third longitudinal section distal to the second longitudinal section of the catheter shaft, with a substantially constant outer diameter less than the outer diameter of the first longitudinal section of the catheter shaft, the first layer having a tapered surface, and the second layer having an inversely tapered surface.

8. The catheter of claim 4 wherein the first layer has a substantially constant wall thickness in the second longitudinal section of the catheter shaft, and the second layer has a tapered inner surface and a tapered outer surface in the second longitudinal section of the catheter shaft.

9. The catheter of claim 8 including a shaft section between and directly adjacent to the first and second longitudinal sections of the catheter shaft, having a constant outer diameter and a constant interfacial diameter between the first and second layers.

10. The catheter of claim 4 wherein the first longitudinal section of the catheter shaft is distal to the second longitudinal section of the catheter shaft, and the first layer has a tapered inner surface and a tapered outer surface in the second longitudinal section of the catheter shaft, and the second layer has a substantially constant wall thickness in the second longitudinal section of the catheter shaft.

11. The catheter of claim 1 wherein the first layer tapers distally to a smaller wall thickness in the first longitudinal section of the catheter shaft, and the second layer tapers distally to a smaller wall thickness in the second longitudinal section of the catheter shaft.

12. The catheter of claim 1 wherein the first and second layers are continuous layers extending from the proximal end to the distal end of the catheter shaft.

13. The catheter of claim 1 wherein the proximal end of the second layer is distal to the proximal end of the first layer, and the distal end of the first layer is proximal to the distal end of the second layer.

14. The catheter of claim 1 wherein the catheter is a balloon catheter having a balloon secured to at least a section of the catheter shaft with an interior in fluid communication with the shaft lumen.

15. The catheter of claim 14 wherein the shaft comprises an outer tubular member defining an inflation lumen in fluid communication with the balloon, and the shaft includes an inner tubular member disposed within the inflation lumen defining a guidewire lumen, and wherein the balloon has a proximal end sealingly secured to a distal section of the outer tubular member and a distal end sealingly secured to a distal section of the inner tubular member.

16. The catheter of claim 1 wherein the first longitudinal section of the shaft has a length of about 13 cm to about 76 cm.

17. The catheter of claim 4 including an inner liner having a substantially constant wall thickness on an inner surface of the first layer.

18. An intraluminal catheter, comprising an elongated shaft having a proximal end, a distal end, at least one lumen a first layer, a second layer, and having

a) a proximal longitudinal section with the first layer having a tapered surface, and the second layer having an inversely tapered surface, the first layer being an inner layer relative to the second layer; and

b) a distal longitudinal section with a tapered outer diameter, the first layer having a substantially constant wall thickness from at least a portion of the distal longitudinal section to the distal end of the shaft.

19. The catheter of claim 18 wherein the proximal longitudinal section has a substantially constant outer diameter.

20. An intraluminal catheter, comprising an elongated shaft having a proximal end, a distal end, at least one lumen, a first layer, a second layer, and having

a) a first longitudinal section with the first layer having a tapered surface, and the second layer having an inversely tapered surface; and

b) a second longitudinal section distal to and directly adjacent to the first longitudinal section, with a tapered outer diameter, the first layer having an outer surface tapering distally to a smaller outer diameter in the second longitudinal section and the second layer having an outer surface tapering distally to a smaller outer diameter in the second longitudinal section.

21. The catheter of claim 20 wherein the first longitudinal section has a substantially constant outer diameter.

22. The catheter of claim 20 wherein the first layer has an inner surface tapering distally to a smaller inner diameter.

23. An intraluminal catheter, comprising an elongated shaft having a proximal end, a distal end, at least one lumen, and having at least a section having cotapered first and second layers, so that the first layer has a tapered surface and the second layer has an inversely tapered surface, the first layer being formed of a polymer having a melt flow index of about 10 to about 20 grams/minute, and the second layer being formed of a polymer having a melt flow index of about 10 to about 20 grams/minute.

24. The catheter of claim 23 wherein the first layer has a higher Shore durometer hardness than the second layer and a melt flow index which is not greater than the melt flow index of the second layer.

25. A method of making an elongated catheter shaft having at least a first and second layer, and a co-tapered section in which the first layer tapers to a smaller wall thickness and the second layer tapers inversely to the taper of the first layer, comprising

a) extruding the first layer from an extruder having a first gear pump at an output end thereof and co-extruding the second layer with the first layer from a second extruder having a second gear pump at an output end thereof, and forming the co-tapered section of the shaft by reversing the rotation of the first gear pump to at least in part form the taper in the first layer; and

b) increasing the speed of the second gear pump from a first speed to a second speed to form the inverse taper in the second layer.

26. The method of claim 25 including, after (ii), forming a distal section of the shaft adjacent to the co-tapered section by decreasing the speed of the second gear pump from the second speed to a third speed

greater than the first speed of the second gear pump and less than the second speed of the second gear pump.

27. The method of claim 25 wherein the shaft has a proximal section and distal section on either end of the co-tapered section having different relative proportions of the first and second layers therein, and including forming the distal section by changing the rotation of the first gear pump from the reversed rotation to a forward rotation and setting the speed of the first gear pump at a second speed less than a first speed of the first gear pump used to form the proximal section.

28. The method of claim 27 wherein the co-tapered section has a length of about 13 cm to about 25 cm, and forming the distal section of the shaft includes decreasing the speed of the second gear pump from the second speed to a third speed.

29. The method of claim 27 wherein forming the co-tapered section of the shaft includes decreasing a speed of the first gear pump from the first speed to a third speed.

30. A method of making an elongated catheter shaft having at least a first and second layer, and a section in which the first layer tapers

distally to a smaller wall thickness, comprising extruding the first layer from an extruder having a first gear pump at an output end thereof and co-extruding the second layer with the first layer from a second extruder, and forming the section of the shaft by reversing the rotation of the first gear pump to at least in part form the taper in the first layer.